

**FIG. 1A**

SEQ.ID.NO.5.

Human VR3A+B- nucleotide sequence of the coding sequence  
(2616 bp).

ATGGCGGATTCCAGCGAAGGCCCGCGCGGGGCGGGGAGGTGGCTGAG  
CTCCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCTCC  
TCCCTGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACCG  
GCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC  
ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTG  
CTGGAGTCCACCCTATATGAGTCCTCGGTGGTGCCTGGGCCCCAAGAAAGCA  
CCCATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGAC  
AACAAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAA  
GCCCCCTGCCCTCAGCCGCCCCCATCCTCAAAGTCTTCAACCGGCCTATC  
CTCTTTGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTC  
CCATTCTTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAG  
CCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAAT  
GGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCGGC  
AACATGCGGGAGTTCATTAACCTCGCCCTTCCGTGACATCTACTATCGAGGT  
CAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACACTACGTGGAA  
CTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAGGCCCGTGGGCGCTTC  
TTCCAGCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGCTGCCCTG  
TCGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCTGACGGAG  
AACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACA  
GTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACACCAAG  
TTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCGCCTCTTC  
CCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTCTCGCCCCCTC  
ATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTCAGCACATCATCCGG  
CGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCAAGGAC  
TGGGCCTATGGGCCAGTGTATTTCCTCGCTTTATGACCTCTCCTCCCTGGAC  
ACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAAG  
ATTGAGAACCGCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTG  
CGGGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTC  
TCCTACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCG  
CTGGAGGGCACACCGCCGTACCCTTACCGCACACGGTGGACTACCTGCGG  
CTGGCTGGCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCATCACC  
AACATCAAAGACTTGTTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTC  
ATTGATGGCTCCTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATC  
GTCTCAGCAGCCCTCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATG

GTCTTTTGCCCTGGTCCTGGGCTGGATGAATGCCCTTTACTTCAACCGTGGG  
CTGAAGCTGACGGGGACCTATAGCATCATGATCCAGAAGATTCTCTTCAAG  
GACCTTTTCCGATTCCCTGCTCGTCTACTTGCTCTTTCATGATCGGCTACGCT  
TCAGCCCTGGTCTCCCTCCTGAACCCGTGTGCCAACATGAAGGTGTGCAAT  
GAGGACCAGACCAACTGCACAGTGCCCACTTACCCCTCGTGCCGTGACAGC  
GAGACCTTCAGCACCTTCCTCCTGGACCTGTTTAAGCTGACCATCGGCATG  
GGCGACCTGGAGATGCTGAGCAGCACCAAGTACCCCGTGGTCTTCATCATC  
CTGCTGGTGACCTACATCATCCTCACCTTTGTGCTGCTCCTCAACATGCTC  
ATTGCCCTCATGGGCGAGACAGTGGGCCAGGTCTCCAAGGAGAGCAAGCAC  
ATCTGGAAGCTGCAGTGGGCCACCACCATCCTGGACATTGAGCGCTCCTTC  
CCCGTATTCCCTGAGGAAGGCCTTCCGCTCTGGGGAGATGGTCAACCGTGGGC  
AAGAGCTCGGACGGCACTCCTGACCGCAGGTGGTGCTTCAGGGTGGATGAG  
GTGAACTGGTCTCACTGGAACCAGAACTTGGGCATCATCAACGAGGACCCG  
GGCAAGAATGAGACCTACCAGTATTATGGCTTCTCGCATACCGTGGGCCG  
CTCCGCAGGGATCGCTGGTTCCTCGGTGGTACCCCGCGTGGTGGAACTGAAC  
AAGAACTCGAACCCGGACGAGGTGGTGGTGCCTCTGGACAGCATGGGGAAC  
CCCCGCTGCGATGGCCACCAGCAGGGTTACCCCGCAAGTGGAGGACTGAT  
GACGCCCCGCTCTAG

**FIG. 2A**

SEQ.ID.NO.6.

SEQ.ID.NO.0:  
The nucleotide sequence of human VR3A+B- is shown  
including 337 bp 5' UT and 547 bp 3'UT.

CAATTGGGATTTAACCCAGGGACTATCCAGCCCCAAAGCCCTTCCCACCAC  
ACCAGGTGGCCTGTCTTGGGGCCAGCTCTGCACACAGGGCCTGGTGCCCCCG  
GGGTGCTTGGGAAGTGGCAGGGCAGAGGTGGGCCCTGTGGCTGTTCTGGCTC  
AGCTTCTAAACAAGAGCCTCTGCTGGGGGCAGAGGGGCCGTGAACCCCTGA  
AATGTTAGGCAGATACCCTGTGGGAGCTTTGTTCTGGGATGCTAAGAACCGC  
TTGAGGATTTAAGCTTTGCCACTTTGGCTCCGGAGCAAGGGCAGAGGCTGAG  
CAGTGCAGACGGGCCTGGGGCAGGCATGGCGGATTCCAGCGAAGGCCCCCGC  
GCGGGGCCCGGGGAGGTGGCTGAGCTCCCCGGGGATGAGAGTGGCACCCCA  
GTGGGGAGGCTTTTCCTCTCTCCTCCCTGGCCAATCTGTTTGAGGGGGAGGA  
TGGCTCCCTTTTCGCCCTCACCGGCTGATGCCAGTCGCCCTGCTGGCCACGG  
GATGGGCGACCAAATCTGCGCATGAAGTTCCAGGGCGCCTTCCGCAAGGGGG  
TGCCCAACCCCATCGATCTGCTGGAGTCCACCCTATATGAGTCCTCGGTGGT  
GCCTGGGCCCAAGAAAGCACCCATGGACTCACTGTTTGACTACGGCACCTAT  
CGTCACCACTCCAGTGACAACAAGAGGTGGAGGAAGAAGATCATAGAGAAAGC  
AGCCGCAGAGCCCCAAAGCCCCTGCCCTCAGCCGCCCCCATCCTCAAAGT  
CTTCAACCGGCCTATCCTCTTTGACATCGTGTCCCGGGGCTCCACTGCTGAC  
CTGGACGGGCTGCTCCCATTTCTTGCTGACCACAAGAAACGCCTAACTGATG  
AGGAGTTTCGAGAGCCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCT  
GAACCTGAGCAATGGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCG  
GAGCGCACCGGCAACATGCGGGAGTTCATTAACCTCGCCCTTCCGTGACATCT  
ACTATCGAGGTCAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACA  
CTACGTGGAACCTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAGGCCCGT  
GGGCGCTTCTTCCAGCCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGC  
TGCCCCTGTGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCT  
GACGGAGAACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGC  
AACACAGTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACA  
CCAAGTTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCGCCT  
CTTCCCCGACAGCAACCTGGAGGGCCGTGCTCAACAACGACGGCCTCTCGCCC  
CTCATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTTACGACATCATCC  
GGCGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCAAGGA  
CTGGGCCCTATGGGCCAGTGTATTCTCGCTTTTATGACCTCTCCTCCCTGGAC  
ACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAAGA  
TTGAGAACCGCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTGCG  
GGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTCTCC  
TACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCGCTGG  
AGGGCACACCGCCGTACCCTTACCGCACACGGTGGACTACCTGCGGCTGGC

**FIG. 2B**

TGGCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCATCACCAACATC  
AAAGACTTGTTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTCATTGATG  
GCTCCTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATCGTCTCAGC  
AGCCCTCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATGGTCTTTGCC  
CTGGTCTTGGGCTGGATGAATGCCCTTTACTTCACCCGTGGGCTGAAGCTGA  
CGGGGACCTATAGCATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCG  
ATTCTGCTCGTCTACTTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTC  
TCCCTCCTGAACCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCA  
ACTGCACAGTGCCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCAC  
CTTCCTCCTGGACCTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATG  
CTGAGCAGCACCAAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACA  
TCATCCTCACCTTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGA  
GACAGTGGGCCAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGTGG  
GCCACCACCATCCTGGACATTGAGCGCTCCTTCCCCGTATTCTGAGGAAGG  
CCTTCCGCTCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGCACTCC  
TGACCGCAGGTGGTGCTTCAGGGTGGATGAGGTGAACTGGTCTCACTGGAAC  
CAGAACTTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACCTACCAGT  
ATTATGGCTTCTCGCATACCGTGGGCCCGCTCCGCAGGGATCGCTGGTCCTC  
GGTGGTACCCCGCGTGGTGGAACTGAACAAGAAGTGAACCCGGACGAGGTG  
GTGGTGCTCTGGACAGCATGGGGAACCCCGCTGCGATGGCCACCAGCAGG  
GTTACCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAGGGACTGCAGCC  
CAGCCCCAGCTTCTCTGCCCCACTCATTTCTAGTCCAGCCGCATTTTCAGCAGT  
GCCTTCTGGGGTGTCCCCCACACCCTGCTTTGGCCCCAGAGGCGAGGGACC  
AGTGGAGGTGCCAGGGAGGCCCCAGGACCCTGTGGTCCCCTGGCTCTGCCTC  
CCCACCCTGGGGTGGGGGCTCCCGGCCACCTGTCTTGCTCCTATGGAGTCAC  
ATAAGCCAACGCCAGAGCCCCCTCCACCTCAGGCCCCAGCCCCTGCCTCTCCA  
TTATTTATTTGCTCTGCTCTCAGGAAGCGACGTGACCCCTGCCCCAGCTGGA  
ACCTGGCAGAGGCCTTAGGACCCCGTTCCAAGTGCAGTGGCCGGCCAAGCCC  
CAGCCTCAGCCTGCGCCTGAGCTGCATGCGCCACCATTTTTGGCAGCGTGGC  
AGCTTTGCAAGGGGCTGGGGCCCTCGGCGTGGGGCCATGCCTTCTGTGTGTT  
CTGTAGTGTCTGGGATTTGCCGGTGCTCAATAAATGTTTATTCATTGACGGT  
GGAAAAAAAAAAAAA

**FIG. 3**

SEQ.ID.NO.7.

Coding sequence for human VR3A+B- (871 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPSP  
ADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPCKA  
PMDSLFDYGTyrHHSSDNKRWRKKIIEKQPQSPKAPAPQPPPIKVFNRPI  
LFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALLNLSN  
GRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRCKHYVE  
LLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHIVNYLTE  
NPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFVTKMYDLLLLKCARLF  
PDSNLEAVLNNDGLSPLMMAAKTGKIGIFQHIIRREVTDEDTRHLSRKFKD  
WAYGPVYSSLYDLSSLDTCGEEASVLEILVYNSKIENRHEMLAVEPINELL  
RDKWRKFGAVSFYINVVSYLCAVIFTLTAYYQPLEGTPPYPYRTTVDYLR  
LAGEVITLFTGVLFITNIKDLFMKKCPGVNSLFDGSGFQLLYFYISVLVI  
VSAALYLAGIEAYLAVMVFALVLGWMNALYFTRGLKLTGTYSIMIQKILFK  
DLFRFLLVYLLFMIGYASALVSLNPCANMKVCNEDQTNCTVPTYPSCRDS  
ETFSTFLDLDFKLTIGMGDLEMLSSTKYPVVFIILLVTYIILTFVLLLNM  
IALMGETVGQVSKESKHIWKLQWATTILDIERSFVFLRKAFRSGEMVTVG  
KSSDGTPDRRWCFRVDEVNWSHWNQNLGIINEDPGKNETYQYYGFSHTVGR  
LRRDRWSSVPRVVELNKNNSNPDEVVPLDSMGNPRCDGHQQGYPRKWRTDDAPL

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**FIG. 4A**

SEQ.ID.NO.8.

Human VR3A-B- nucleotide sequence of the coding  
sequence (2436 bp).

ATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCCGGGGAGGTGGCTGAG  
CTCCCCGGGGATGAGAGTGGCACCCCAAGGTGGGGAGGCTTTTCTCTCTCTCC  
TCCCTGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTTCGCCCTCACCG  
GCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC  
ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTG  
CTGGAGTCCACCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCA  
CCCATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGAC  
AACAAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAA  
GCCCCTGCCCCCTCAGCCGCCCCCATCCTCAAAGTCTTCAACCGGCCTATC  
CTCTTTTGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTC  
CCATTCTTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAG  
CCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAAT  
GGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCGGC  
AACATGCGGGAGTTCATTAACCTCGCCCTTCCGTGACATCTACTATCGAGGT  
CAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACACTACGTGGAA  
CTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAAGCCCCGTGGGCGCTTC  
TTCCAGCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGCTGCCCCCTG  
TCGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCTGACGGAG  
AACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACA  
GTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACACCAAG  
TTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCCGCCTCTTC  
CCCGACAGCAACCTGGAGGCGGTGCTCAACAACGACGGCCTCTCGCCCCCTC  
ATGATGGCTGCCAAGACGGGCAAGATTGAGAACCGCCACGAGATGCTGGCT  
GTGGAGCCCATCAATGAACTGCTGCGGGACAAGTGGCGCAAGTTCGGGGCC  
GTCTCCTTCTACATCAACGTGGTCTCCTACCTGTGTGCCATGGTCATCTTC  
ACTCTCACCGCCTACTACCAGCCGCTGGAGGGCACACCGCCGTACCCTTAC  
CGCACCACGGTGGACTACCTGCGGCTGGCTGGCGAGGTCATTACGCTCTTC  
ACTGGGGTCCTGTTCTTTCATCACCAACATCAAAGACTTGTTCATGAAGAAA  
TGCCCTGGAGTGAATTCTCTCTTCATTGATGGCTCCTTCCAGCTGCTCTAC  
TTCATCTACTCTGTCTGGTGATCGTCTCAGCAGCCCTCTACCTGGCAGGG  
ATCGAGGCCTACCTGGCCGTGATGGTCTTTGCCCTGGTCTGGGCTGGATG  
AATGCCCTTTACTTCACCCGTGGGCTGAAGCTGACGGGGACCTATAGCATC

**FIG. 4B**

ATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTTCCTGCTCGTCTAC  
TTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTGAACCCG  
TGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGTGCCC  
ACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCTGGAC  
CTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAGCACC  
AAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACATCATCCTCACC  
TTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGTGGGC  
CAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGTGGGCCACCACC  
ATCCTGGACATTGAGCGCTCCTTCCCCGTATTCCTGAGGAAGGCCTTCCGC  
TCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGCACTCCTGACCGC  
AGGTGGTGCTTCAGGGTGGATGAGGTGAACTGGTCTCACTGGAACCAGAAC  
TTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACCTACCAGTATTAT  
GGCTTCTCGCATACCGTGGGCCGCCTCCGCAGGGATCGCTGGTCCTCGGTG  
GTACCCCGCGTGGTGGAACGAACAAGAACTCGAACCCGGACGAGGTGGTG  
GTGCCTCTGGACAGCATGGGGAACCCCGCTGCGATGGCCACCAGCAGGGT  
TACCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAG

**FIG. 5**

SEQ.ID.NO.9.

Coding sequence for human VR3A-B- (811 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPSP  
ADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPKA  
PMDSLFDYGTyrHHSSDNKRWRKKIIEKQPQSPKAPAPQPPPILKVFNRPI  
LFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALLNLSN  
GRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRCKHYVE  
LLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHIVNYLTE  
NPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFVTKMYDLLLLKCARLF  
PDSNLEAVLNNDGLSPLMMAAKTGKIENRHEMLAVEPINELLRDKWRKFGA  
VSFYINVVSYLCAMVIFTLTAYYQPLEGTPPYRPTTVDYLRRLAGEVITLF  
TGVLEFFITNIKDLFMKKCPGVNSLFIDGSFQLLYFYISVLVIVSAALYLAG  
IEAYLAVMVFALVLGWMNALYFTRGLKLTGTYSIMIQKILFKDLFRFLVY  
LLFMIGYASALVSLNPCANMKVCNEDQTNCTVPTYPSCRDSETFSTFLLD  
LFKLTIGMGDLEMLSSTKYPVVFILLVTYIILTFVLLLNMLIALMGETVG  
QVSKEKHIWKLQWATTILDIERSFVPVFLRKAFRSGEMVTVGKSSDGTDPDR  
RWCFRVDEVNWSHWNQNLGIINEDPGKNETYQYYGFSHTVGRLRRDRWSSV  
VPRVVELNKN SNPDEVVPLDSMGNPRCDGHQQGYPRKWRTDDAPL



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## FIG. 6

SEQ.ID.NO.10.

Human VR3A+B+ nucleotide sequence of the coding sequence  
(2229 bp).

ATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCCGGGGAGGTGGCTGAGCT  
CCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCTCCTCCC  
TGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACCGGCTGAT  
GCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGCATGAAGTT  
CCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTGCTGGAGTCCA  
CCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCACCCATGGACTCA  
CTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGACAACAAGAGGTGGAG  
GAAGAAGATCATAGAGAAGCAGCCGAGAGCCCCAAAGCCCCCTGCCCTCAGC  
CGCCCCCATCCTCAAAGTCTTCAACCGGCCTATCCTCTTTGACATCGTGTCC  
CGGGGCTCCACTGCTGACCTGGACGGGCTGCTCCCATTCTTGCTGACCCACAA  
GAAACGCCTAACTGATGAGGAGTTTCGAGAGCCATCTACGGGGAAGACCTGCC  
TGCCCAAGGCCTTGCTGAACCTGAGCAATGGCCGCAACGACACCATCCCTGTG  
CTGCTGGACATCGCGGAGCGCACCGGCAACATGAGGGAGTTCATTAACCTCGCC  
CTTCCGTGACATCTACTATCGAGGTCAGACAGCCCTGCACATCGCCATTGAGC  
GTGCTGCAAACACTACGTGGAACCTTCTCGTGGCCCAGGGAGCTGATGTCCAC  
GCCCAGGCCCCGTGGGCGCTTCTTCCAGCCCAAGGATGAGGGGGGCTACTTCTA  
CTTTGGGGAGCTGCCCCGTGCTGCTGGCTGCCTGCACCAACCAGCCCCACATTG  
TCAACTACCTGACGGAGAACCCCCACAAGAAGGCGGACATGCGGCGCCAGGAC  
TCGCGAGGCAACACAGTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCG  
TGAGAACACCAAGTTTGTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTG  
CCCGCCTCTTCCCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTC  
TCGCCCCCTCATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTCAGCACAT  
CATCCGGCGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCA  
AGGACTGGGCCTATGGGCCAGTGTATTCCTCGCTTTATGACCTCTCCTCCCTG  
GACACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAA  
GATTGAGAACC GCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTGC  
GGGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTCTCC  
TACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCGCTGGA  
GGGCACACCGCCGTACCCTTACCGCACACAGGTGGACTACCTGCGGCTGGCTG  
GCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCTTACCAACATCAAA  
GACTTGTTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTCAATTGATGGCTC  
CTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATCGTCTCAGCAGCCC  
TCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATGGTCTTTGCCCTGGTC  
CTGGGCTGGATGAATGCCCTTTACTTCACCCGTGGGCTGAAGCTGACGGGGAC  
CTATAGCATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTCTCTGC  
TCGTCTACTTGCTCTTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTG  
AACCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGT  
GCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCTGG  
ACCTGTTTAAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAGCACC  
AAGTACCCCGTGGTCTTCATCATCTGCTGGTGACCTACATCATCCTCACCTT  
TGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGTGGGCCAGG  
TCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGAGCGGCAGGCGAGGCTGTGA

2229 bp, 13,444 bp

SEQ.ID.NO.11.

TGTGCGAGGCCAGGGGAGGGGCTTTCCAGAGGAGGCCAGTTGAGCTGGAACACCA  
 GTGGGGAGGAGTTGACCAGCAAAGGTGCAGGGAGGGATCAGCACTTTGCACT  
 GGGGAGCAGAGTTTGTGCACTGGGGAAGTCAACTCAAGTATTGGAGCCTCAG  
 TTTCTGTCTGTGTAATAATGGGTTCATCATGACAGTGTTTGTATGAGGAAAAGG  
 ACTGCCGGCCTACACAGCAAGTCCACATGGATTTTCTGAGCCCCCTCCTGTGC  
 CTGAAGCCCACGGTTAATGGTTCCTGCTTAGCAGGTGCTTACCACGTGCCAG  
 GCACTGCACTGCACTGGCCACTGGACTGCATGTTCTGTCCATGAGGCTTGGA  
 TATCCCCATCTTACAGATCAGGAAGCTGAGGCTATGAAATGTGCACTTGCTC  
 AATGTTCATGGAATGACTAAGTGTGGAGCCTGGATTTGAACTTGCTCTCTGG  
 GGCTCCAAAGCTGGCTTTCTTGGTCAGCAGTAGGGTCTGGGATCCAAGTATG  
 GGGTCCAGCTTGACCCCTGAAGTCCACCCTCTTTTCAGCTAATGCCCAAGGTA  
 GTTGACCTGGGGCCAATTTGTGTTTCCAGGTTTCGTGAAAGAGCTCCTGTTG  
 CAGTTCCCGCCTGAGGCTTGGCGGCCAACACATCTGGGAGTGGCCTCCCTG  
 TGCCCCCTGTCATTACAACGGTGGCTTTGAAGCAGCTGGCAGCACTGCTGCTT  
 GTCCACGTGGAAGGGGGCTTCCTGGAGCCCCCGCCCCCTGGCCGGGTTCCTGCC  
 TGACTCCCCCTTTTCATTCCCTTGCAGGCTGAGCAGTGCAGACGGGCCTGGGGC  
 AGGCATGGCGGATTCCAGCGAAGGCCCGCGCGGGGCCCGGGGAGGTGGCT  
 GAGCTCCCCGGGGATGAGAGTGGCACCCAGGTGGGGAGGCTTTTCTCTCTCT  
 CCTCCCTGGCCAATCTGTTTGAAGGGGGAGGATGGCTCCCTTTCGCCCTCACC  
 GGCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC  
 ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTGC  
 TGGAGTCCACCCTATATGAGTCTTCGGTGGTGCTGGGGCCCAAGAAAGCACC  
 CATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGACAAC  
 AAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCCAAAGCCC  
 CTGCCCCCTCAGCCGCCCCCCCCATCCTCAAAGTCTTCAACCGGCCTATCCTCTT  
 TGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTCCCATTCT  
 TTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAGCCATCTA  
 CGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAATGGCCGCAA  
 CGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCCGGCAACATGAGG  
 GAGTTCATTAACTCGCCCTTCCGTGACATCTACTATCGAGGTCAGACAGCCC  
 TGCACATCGCCATTGAGCGTTCGTGCAAACACTACGTGGAACCTTCTCGTGGC  
 CCAGGGAGCTGATGTCCACGCCCCAGGCCCGTGCGCGCTTCTTCCAGCCCAAG  
 GATGAGGGGGGGCTACTTCTACTTTGGGGAGCTGCCCCCTGTCGCTGGCTGCCT  
 GCACCAACCAGCCCCACATTGTCAACTACCTGACGGAGAACCCCCACAAGAA  
 GGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACAGTGCTGCATGCGCTG  
 GTGGCCATTGCTGACAACACCCGTGAGAACACCAAGTTTGTTACCAAGATGT  
 ACGACCTGCTGCTGCTCAAGTGTGCCCCGCTCTTCCCCGACAGCAACCTGGA  
 GGCCGTGCTCAACAACGACGGCCTCTCGCCCCCTCATGATGGCTGCCAAGACG  
 GGCAAGATTGGGATCTTTTCAGCACATCATCCGGCGGGGAGGTGACGGATGAGG  
 ACACACGGCACCTGTCCCGCAAGTTCAAGGACTGGGCCTATGGGCCAGTGTA  
 TTCCTCGCTTTATGACCTCTCCTCCCTGGACACGTGTGGGGAAGAGGCCTCC  
 GTGCTGGAGATCCTGGTGTACAACAGCAAGATTGAGAACCGCCACGAGATGC  
 TGGCTGTGGAGCCCATCAATGAACTGCTGCGGGACAAGTGGCGCAAGTTCCG

**FIG. 7B**

GGCCGTCTCCTTCTACATCAACGTGGTCTCCTACCTGTGTGCCATGGTCAT  
CTTCACTCTCACCGCCTACTACCAGCCGCTGGAGGGCACACCGCCGTACCC  
TTACCGCACACGGTGGACTACCTGCGGCTGGCTGGCGAGGTCATTACGCT  
CTTCACTGGGGTCTGTTCTTCTTTCACCAACATCAAAGACTTGTTTCATGAA  
GAAATGCCCTGGAGTGAATTCTCTCTTCATTGATGGCTCCTTCCAGCTGCT  
CTACTTCATCTACTCTGTCTGGTGATCGTCTCAGCAGCCCTCTACCTGGC  
AGGGATCGAGGCCCTACCTGGCCGTGATGGTCTTTGCCCTGGTCTGGGCTG  
GATGAATGCCCTTTACTTTCACCCGTGGGCTGAAGCTGACGGGGACCTATAG  
CATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTCTTGCTCGT  
CTACTTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTGAA  
CCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGT  
GCCCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCT  
GGACCTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAG  
CACCAAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACATCATCCT  
CACCTTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGT  
GGGCCAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGAGCGGCAG  
GCGCAGGCTGTGAGGCTCACCGATGTCCCTCCTGACCCTCCCTCCCCGAG  
TGGGCCACCACCATCCTGGACATTGAGCGCTCCTTCCCCGTATTCTGAGG  
AAGGCCTTCCGCTCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGC  
ACTCCTGACCGCAGGTGGTGTCTCAGGGTGGATGAGGTGAAGTGGTCTCAC  
TGGAACCAGAACTTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACC  
TACCAGTATTATGGCTTCTCGCATACCGTGGGCCGCCTCCGCAGGGATCGC  
TGGTCTCCTCGGTGGTACCCCGCGTGGTGGAACTGAACAAGAACTCGAACCCG  
GACGAGGTGGTGGTGCCCTCTGGACAGCATGGGGAACCCCGCTGCGATGGC  
CACCAGCAGGGTTACCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAG  
GGACTGCAGCCCAGCCCCAGCTTCTCTGCCCACTCATTTCTAGTCCAGCCG  
CATTTTCAGCAGTGCCTTCTGGGGTGTCCCCCACACCCTGCTTTGGCCCCA  
GAGGCGAGGGACCAGTGGAGGTGCCAGGGAGGCCCCAGGACCCTGTGGTCC  
CCTGGCTCTGCCTCCCCACCCTGGGGTGGGGGCTCCCGGCCACCTGTCTTG  
CTCCTATGGAGTCACATAAGCCAACGCCAGAGCCCCCTCCACCTCAGGCCCC  
AGCCCCCTGCCTCTCCATTATTTATTTGCTCTGCTCTCAGGAAGCGACGTGA  
CCCCTGCCCCAGCTGGAACCTGGCAGAGGCCTTAGGACCCCCGTTCGAAGTG  
CACTGCCCCGGCCAAGCCCCAGCCTCAGCCTGCGCCTGAGCTGCATGCGCCA  
CCATTTTTTGGCAGCGTGGCAGCTTTGCAAGGGGCTGGGGCCCTCGGCGTGG  
GGCCATGCCTTCTGTGTGTTCTGTAGTGTCTGGGATTTGCCGGTGCTCAAT  
AAATGTTTATTTCATTGACGGTGGAACCAAAAAAAAAAAAAA

**FIG. 8**

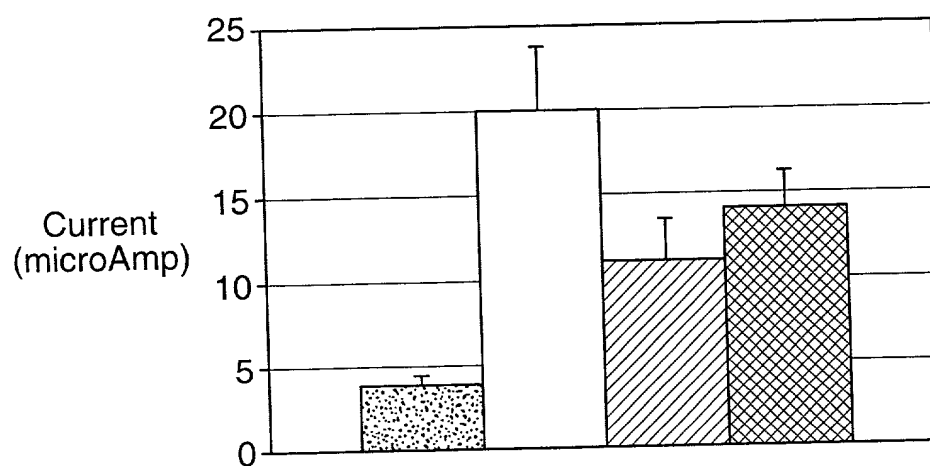
SEQ.ID.NO.12.

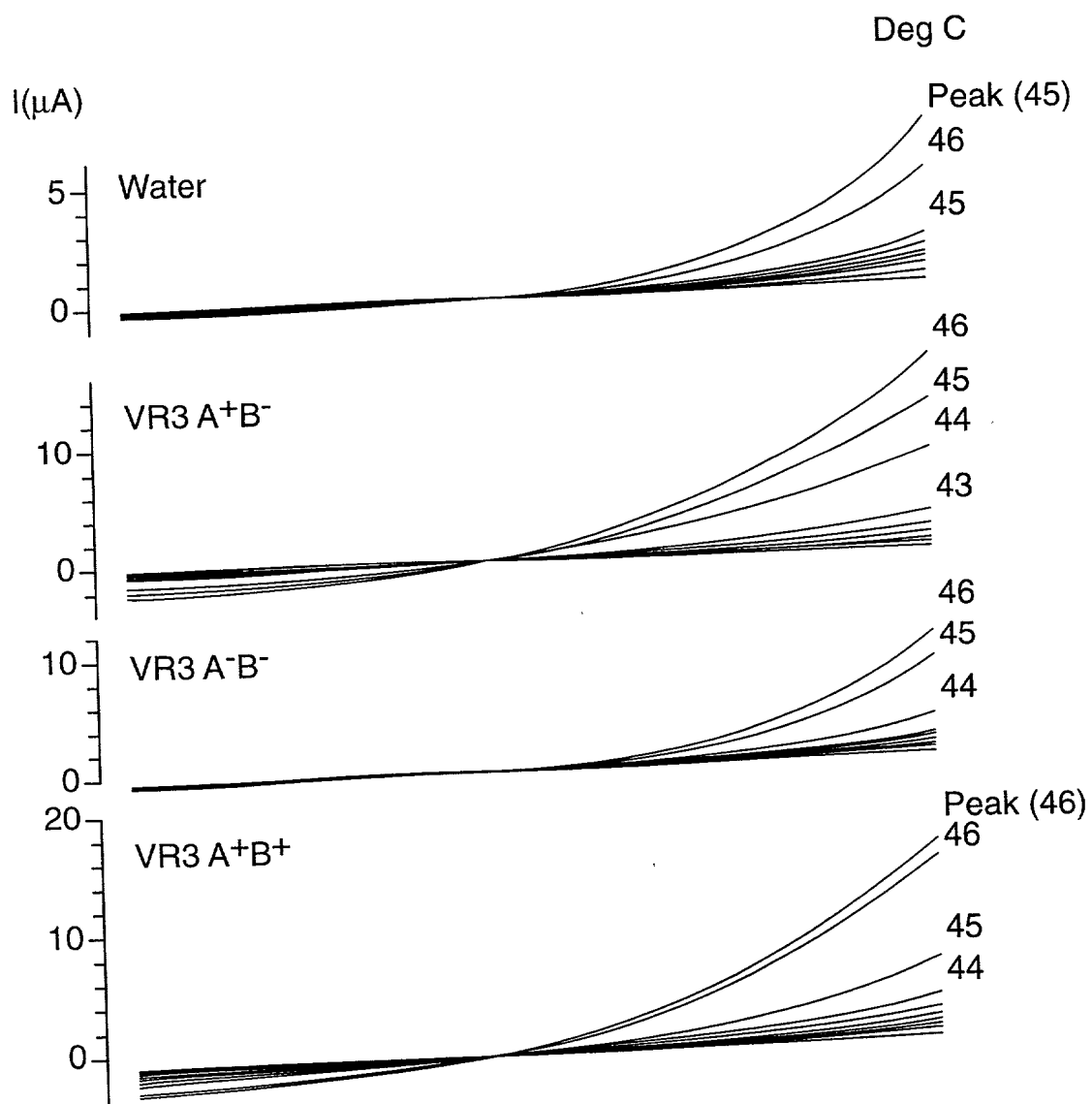
Coding sequence for human VR3A+B+ (742 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPS  
PADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPK  
KAPMDSLFDYGYTYRRHSSDNKRWRKKIIEKQPQSPKAPAPQPPILKVFN  
RPILFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALL  
NLSNGRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRC  
KHYVELLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHI  
VNYLTENPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFKVTKMYDLLL  
LKCARLFPDSNLEAVLNNDGLSPLMMAAKTGKIGIFQHIIRREVTDEDTR  
HLSRKFKDWAYGPVYSSLYDLSSLDTCGEEASVLEILVYNSKIENRHEML  
AVEPINELLRDKWRKFGAVSFYINVVSYLCAMVIFTLTAYYQPLEGTPPY  
PYRTTVVDYLRLAGEVITLFTGVLFFFTNIKDLFMKKCPGVNSLFIDGSFQ  
LLYFIYSVLVIVSAALYLAGIEAYLAVMVFALVLGWMNALYFTRGLKLTG  
TYSIMIQKILFKDLFRFLLVYLLFMIGYASALVSLNPNPCANMKVCNEDQT  
NCTVPTYPSCRDSETFSTFLDLFKLTIGMGDLEMLSSTKYPVVFIIILLV  
TYIILTFLVLLNMLIALMGETVGQVSKEKHIWKLOSGRRRL

**FIG. 9**

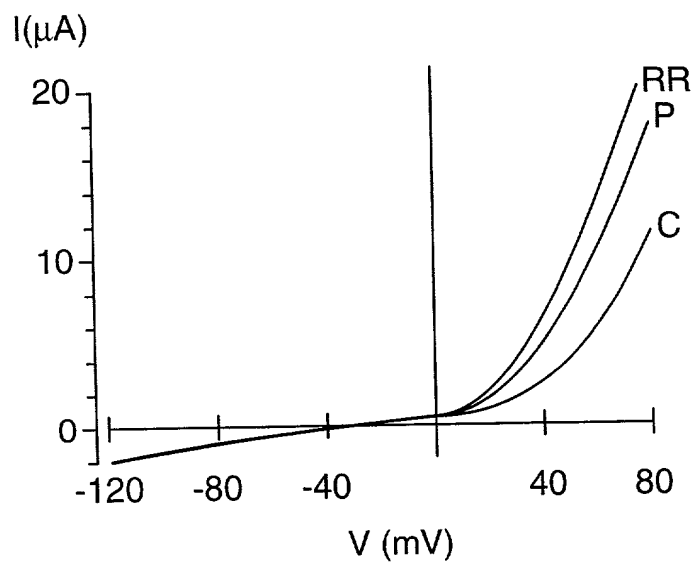
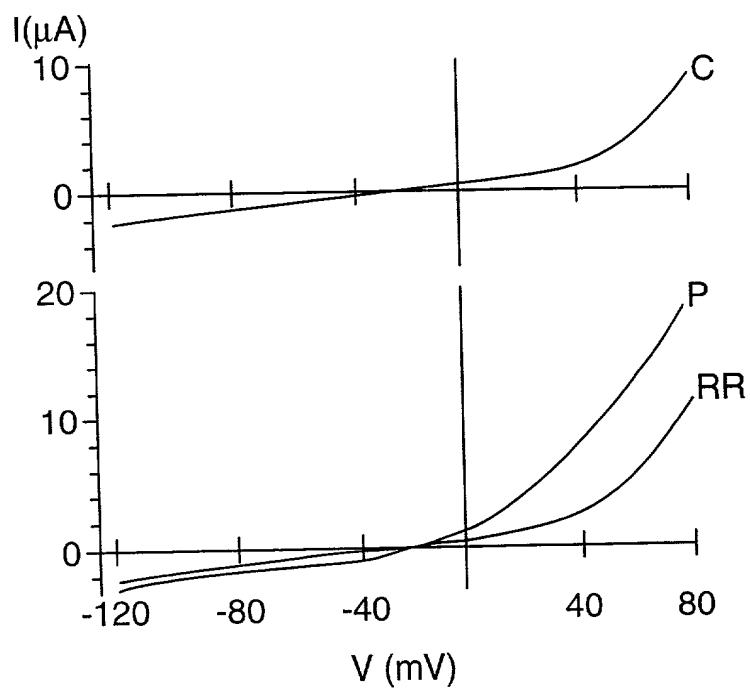
	Water-injected controls	VR3 A+B-	VR3 A-B-	VR3 A+B+
Number of living oocytes	88	9	47	29
Number of dead oocytes	44	90	40	54
Percent Alive	67%	9% (* p<e-17)	54% (p = 0.99)	35% (* p = 5.4 e-6)

**FIG. 10A**

**FIG. 10B**

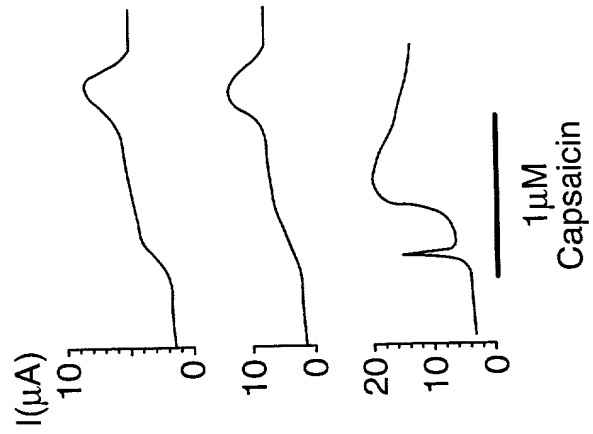
**FIG. 11A**

VRI and water

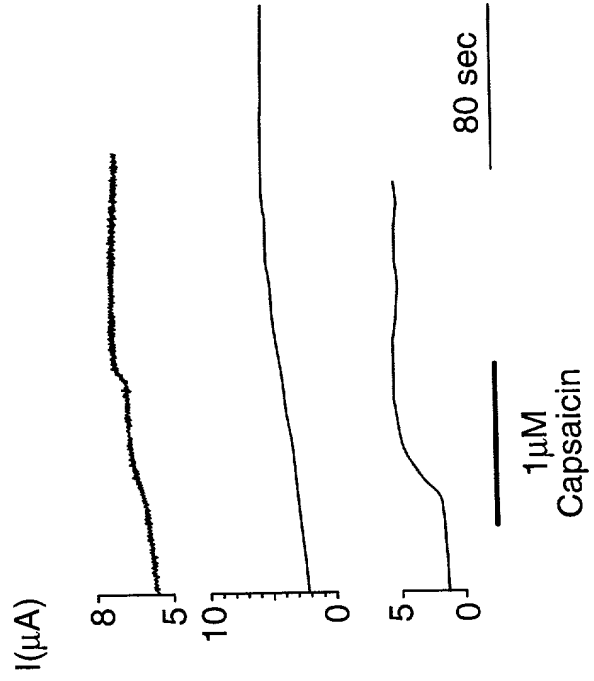
**FIG. 11B**VRI and VR3 A<sup>+</sup>B<sup>-</sup>



**FIG. 12A**  
VR1 and water



**FIG. 12B**  
VR1 and VR3 A<sup>+</sup>B<sup>-</sup>



**FIG. 13**

Tissue or cell type	hVR3 (mean intensity)	hVR1 (mean intensity)
Liver	900+/-50 (p<0.005)	55+/-3 (p<0.05)
Raji lymphoma cell line	255+/-20 (p<0.005)	NS
Spleen	196+/-19 (p<0.01)	NS
Lung	150+/-22 (p<0.01)	NS
DRG	129+/-21 (p<0.025)	90+/-3 (p<0.05)
Ovary	128+/-9 (p<0.0025)	69+/-2 (p<0.0005)
Placenta	120+/-7 (p<0.001)	NS
Trachea	106+/-7 (p<0.001)	54+/-4 (p<0.01)
Small intestine	105+/-3 (p<0.001)	62+/-5 (p<0.01)
Prostate*	72+/-5 (p<0.0025)	38+/-1 (p<0.0005)
Kidney	62+/-4 (p<0.05)	57+/-4 (p<0.005)
Spinal cord	57+/-2 (p<0.00025)	47+/-3 (p<0.005)

Values are the mean intensity of the labeled cRNA hybridizing to the cDNA microarray +/- S.E.M. The mean intensity for cRNAs from all tissues shown were significantly different (p value in the parentheses) from 75% of the control plant cDNA value. Data are averaged from 3-6 experiments. NS: not significantly different from plant gene control (see Luo et al., 1999 for more detailed methods). \*Tissue from which the VR3 was cloned.